NEW RECORDS AND COMPREHENSIVE LIST OF THE ALGAL TAXA OF UTAH LAKE, UTAH, USA

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Abstract.— Utah Lake is a slightly saline ecosystem containing more than 700 algal taxa. During the past decade a total of 106 algal taxa has been found that has not previously been reported in this water. These new records are reported herein, together with a comprehensive listing of all algal taxa reported from Utah Lake to date.

Utah Lake is a shallow, slightly saline hypereutrophic lake located in the central part of Utah at the eastern edge of the Great Basin geologic province. It is one of the largest freshwater lakes in western North America. The Lake is composed of three major subsystems, Goshen Bay, Provo Bay, and the main body of the lake. Goshen Bay has the highest salinity in the lake, ranging up to 2300 mg/1 TDS during summer months. Provo Bay is significantly less saline, with TDS generally less than 600 mg/1. The main body of the lake is intermediate in salinity, ranging between 790 and 930 mg/1 TDS (Grimes and Rushforth 1983). Littoral areas in the lake are diverse and include rocky, sandy, and marshy shorelines as well as extensive clay ooze. Emergent vegetation of several vascular species is common in these littoral regions. This wide diversity of major habitat types with disparate salinities coupled with a broad array of microhabitats contributes to an unusually large number of algal taxa found in the lake.

The algal flora of Utah Lake has been of interest for some time. The first reports were published more than 50 years ago by Tanner (1930, 1931) and Snow (1932). After a 40-year hiatus, Utah Lake algae were again examined and reported in two brief communications by Harding (1970, 1971).

The first extensive examination of Utah Lake diatoms was undertaken by Bolland (1974), who studied a 5-m core collected offshore from Geneva. Two additional cores from the main lake and one core from Provo Bay were analyzed by Javakul et al. (1983). Diatoms from the surface sediments of the lake have also been reported in two papers by Grimes and Rushforth (1982, 1983).

Phytoplankton of Utah Lake was sampled in the mid 1970s by workers of the U.S. Environmental Protection Agency (1977). Their report included a short list of genera present in the lake, together with accessory water chemical data. More extensive phytoplankton sampling was reported by Whiting et al. (1978) in a paper on the environmental requirements of selected Utah Lake algal taxa. This paper included a discussion of several of the dominant species in the lake, together with their environmental preferences. The following year, Squires et al. (1979) discussed the environmental requirements of the dominant phytoplankters that occupy the lake during some summers. These authors demonstrated competitive displacement of the dinoflagellate *Ceratium hirundinella* by the blue-green alga *Aphanizomenon flos-aquae*.

A summary of research on the algae in the water column of the lake performed from 1974 through 1978 (Rushforth et al. 1981) included a comprehensive species list of the phytoplankters and ecological and distribution information on other major taxa.

Grimes et al. (1980) published the only paper to date dealing with the epiphytic algae of the lake. Their paper dealt exclusively with the diatom assemblages on living and dead stems of the grass *Phragmites australis*, which grows in many littoral areas of the lake.

The present paper provides a list of all algal species reported in the literature from all

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habitats of Utah Lake during the years 1930–1978. It also presents the species we have taken in our studies of the lake during 1978–1982, including a significant number of new records from the lake.

METHODS

More than 1000 algal samples were collected from Utah Lake during the period 1978–1982. These samples were collected from all major habitat types and the majority of microhabitats in the lake as part of a long-term cooperative analysis of the lake ecosystem. Collections included qualitative plankton tows, quantitative total plankton samples, qualitative epiphyton samples, and quantitative bottom sediment samples, as well as various qualitative grab samples for strictly taxonomic study.

Samples were returned to our laboratory at Brigham Young University and studied as soon as possible for living nondiatom taxa. Following such study, permanent diatom slides were prepared using standard acid oxidation procedures. All samples were examined on Zeiss RA microscopes using Nomarski and bright field microscopy. Diatom slides have been deposited in the Brigham Young University diatom collection.

All published papers dealing with the algal flora of Utah Lake were studied, and the species names were categorized according to division, class, and order. In examining these papers, we accepted only species that were reported as occurring in the lake or in the marshes at the edge of the lake. This was especially important for Snow's (1932) paper, since she studied a number of waters around the lake that represent separate habitat types.

RESULTS

A total of 686 citations of algal names has been reported in the literature for Utah Lake. In addition, we present herein 106 new records to bring the total number of reported taxa to 792 (Table 1). It should be mentioned that this figure is somewhat misleading since 81 of the citations in the literature are generic names only without specific epithets, and some of these would undoubtedly be duplicates of names used by other authors. In addition, some of the names used by various authors are synonyms of those used by others. We have noted a few of these, but a complete determination of conspecificity is beyond the scope of this paper. We hope to work on selected genera in the future to help resolve this problem.

The largest group of algae in the lake is the diatoms, which are represented by 532 taxonomic names in 51 genera. The Chlorophyta is represented in the lake by a total of 150 taxa in 56 genera. Blue-green algae are also common in the lake, with a total of 69 taxa being reported in 24 genera. The Chrysophyceae is represented by 3 genera containing 9 taxa and the Xanthophyceae by 5 genera containing 13 taxa. In addition, 5 genera including 13 species of Euglenophyta, 2 genera including 4 species of Pyrrhophyta, and 2 genera of Cryptophyta are found in the algal flora of Utah Lake.

The new records for the algal flora of Utah Lake reported herein (Table 1) include 63 species and one genus of diatoms, 14 species and one genus of Chlorophyceae, one species of Xanthophyceae, 25 species and three genera of Cyanophyceae, and three species of Euglenophyta.

TABLE 1. Algal taxa collected from Utah Lake from 1930 to the present. The reference number refers to the literature citation provided at the end of the table.

Species	Reference													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
DIVISION CYANOPHYTA														
CLASS CYANOPHYCEAE														
Order Chroococcales														
Anacystis rupestris (Lyngb.) Dronet & Dail.										10				14
Aphanocapsa grevillei (Hass.) Rabh.			3											
Aphanocapsa virescens (Hass.) Rabh.			3											

Table 1 continued.

Species	Reference													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Aphanothece gelatinosa (Henn.) Lemm.														14°
Chroococcus minutus (Kuetz.) Naeg.										10				14
Chroococcus turgidus (Kuetz.) Naeg.														14°
Gloeocapsa punctata Naeg.										10				14
Gomphospheria aponina Kuetz.										10				14
Gomphospheria lacustris Chod.										10				14
Holopedium irregulare Lager.										10				14
Marssoniella elegans Lemm.										10				14
Merismopedia elegans A. Braun.	1													
Merismopedia glauca (Ehr.) Naeg.										10				14
Merismopedia tenuissima Lemm.														14°
Microcystis aeruginosa Kuetz. em. Elenk.				4						10				14
Microcystis incerta Lemm.										10				14
Microcystis protocystis Crow								8		10				14
Order Chamaesiphonales														
Chamaesiphon incrustans Grun.			3											14
Xenococcus species			3											
Order Oscillatoriales														
Anabaena azollae Stras.			3											
Anabaena cylindrica Lemm.			3											
Anabaena flos-aquae (Lyngb.) Breb.								8		10				14
Anabaena oscillarioides Bory														14°
Anabaena spiroides Kleb.								8						
Anabaena spiroides var. *crassa* Lemm.				4						10				14
Anabaena torulosa (Carm.) Lager.														14°
Anabaena variabilis Kuetz.														14°
Anabaena species	1													
Anabaena species							7							
Aphanizomenon flos-aquae (Lemm.) Ralfs		2		4				8		10				14
Lyngbya aeruginco-caerulea (Kuetz.) Gom.														14°
Lyngbya aestuarii (Mert.) Liebm.														14°
Lyngbya epiphytica Hier. ex Eng. & Prant.														14°
Lyngbya major Meneg.			3											
Lyngbya majusculla (Dill.) Harv.			3							10				
Lyngbya martensiana Meneg.										10				
Lyngbya species			3											
Microcoleus paludosus Kuetz.) Gom.														14°
Nodularia harveyana (Thwaites) Thuret														14°
Nodularia spumigena Mert.			3											
Nostoc caeruleum Lyngb.										10				14
Nostoc species	1													
Oscillatoria agardhii Gom.														14°
Oscillatoria amoena (Kuetz.) Gom.														14°
Oscillatoria amphibia Ag.														14°
Oscillatoria angusta Koppe														14°
Oscillatoria angustissima West & West										10				14
Oscillatoria articulata Gard.										10				
Oscillatoria limosa (Roth) Ag.														14°
Oscillatoria nigro-viridis Thwaites			3											
Oscillatoria sancta (Kuetz.) Gom.														14°
Oscillatoria subbrevis Schmidle										10				
Oscillatoria subtillissima Kuetz.														14°
Oscillatoria tenuis Ag.										10				14
Oscillatoria species	1													
Oscillatoria species							7							
Phormidium ambiguum Gom.														14°
Phormidium autumnale (Ag.) Gom.			3											

Table 1 continued.

Species	Reference													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Phormidium incrustatum (Naeg.) Gom.														14*
Phormidium inundatum Kuetz.														14*
Phormidium tenue (Meneg.) Gom.	1													
Phormidium species														14*
Plectonema boryanum Gom.	1													
Rivularia species										10				
Schizothrix lacustris A. Braun ex Kuetz.														14*
Spirulina laxa G.M.Sm.														14*
Spirulina major Kuetz.		2												
Tolypothrix species			3											
Tolypothrix species														
CHLOROPHYTA														
CLASS CHLOROPHYCEAE														
Order Volvocales										10				14
Carteria cordiformis (Cart.) Dill.										10				14
Carteria klebsii (Dang.) France em. Troitz.										10				14
Carteria stellifera Nyg.										10				14
Chlamydomonas altera Skuja										10				14
Chlamydomonas globosa Snow										10				14
Chlamydomonas polypyrenoideum Pres.				4										
Eudorina elegans Ehr.			3	4						10				14
Pandorina morum (Muell.) Bory	1													
Pandorina species										10				
Pleodorina illinoisensis Kofoid														14*
Pteromonas cordiformis Lemm. em Fott														14*
Pteromonas cruciata Playf.							7							
Pteromonas species										10				14
Sphaerellopsis aulata (Pasch.) Gerl.										10				14
Wislouchiella planktonica Skv.														
Order Tetrasporales					5									
Gloeocystis ampla (Kuetz.) Lager.										10				14
Sphaerocystis schroeteri Chod.														
Tetraspora lubrica (Roth) Ag.			3											
Order Ulotrichales														
Cylindrocapsa geminella Wolle			3											
Geminella scalariformis G.West			3											
Microspora crassior (Hansg.) Hazen					5									
Microspora floccosa (Vauch.) Thur.			3											
Microspora loefgrenii (Nordst.) Lager.			3											
Microspora stagnorum (Kuetz.) Lager.			3											
Microspora tumidula Hazen		2												
Microspora species			3											14
Ulothrix aequalis Kuetz.														14*
Ulothrix cylindricum Pres.			3											
Ulothrix scalariformis G.West			3											
Ulothrix tenerrima Kuetz.			3											
Ulothrix tenuissima Kuetz.			3											
Ulothrix variabilis Kuetz.			3	4										14
Ulothrix zonata (Web. & Mohr.) Kuetz.	1													
Ulothrix species														
Order Chaetophorales			3											
Aphanochaete repens A.Braun			3											
Chaetophora elegans (Roth) Ag.														

Table 1 continued.

Species	Reference													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Gongrosira species			3											
Myxonema (= *Stigeoclonium*) species		2												
Stigeoclonium aestivale Hazen														14°
Stigeoclonium attenuatum (Hazen) Coll.														14°
Stigeoclonium stagnatile (Hazen) Coll.										10				14
Stigeoclonium subsecundum Kuetz.			3											
Stigeoclonium tenue (Ag.) Kuetz.			3											14
Order Oedogoniales														
Oedogonium capilliforme Kuetz.			3											
Oedogonium capilliforme var. *debaryanum* (Chm.) Hirn.			3											
Oedogonium species	1													
Order Ulvales														
Enteromorpha crinita (Roth) Ag.			3											14
Enteromorpha intestinalis (L.) Grev.			3											
Enteromorpha prolifera (Dan.) Ag.			3											
Enteromorpha species ? (recorded as *Enteromorelia*)	1													
Enteromorpha species		2												
Order Cladophorales														
Cladophora callicoma Kuetz.			3											
Cladophora crispita (Roth) Kuetz.			3											
Cladophora fracta (Dill.) Kuetz.			3											
Cladophora glomerata (Lemm.) Kuetz.			3	4						10				14
Cladophora insignis (Ag.) Kuetz.			3											
Cladophora species	1													
Rhizoclonium hieroglyphicum (Ag.) Kuetz.			3											14
Order Chlorococcales														
Actinastrum gracilimum G.M.Sm.					5									14
Actinastrum hantzschii Lager.					5					10				14
Actinastrum hantzschii var. *elongatum* G.M.Sm.														14°
Actinastrum hantzschii var. *fluviatile* Schr.										10				14
Ankistrodesmus convolutus Corda										10				14
Ankistrodesmus falcatus (Corda) Ralfs					5			8		10				14
Ankistrodesmus falcatus var. *mirabilis* (West & West) G.S.West										10				14
Ankistrodesmus falcatus var. *stipitatus* (Chod.) Lemm.										10				14
Ankyra judayi (G.M.Sm.) Fott.								8		10				14
Botryococcus braunii Kuetz.				4										
Botryococcus sudeticus Lemm.														14°
Characium species		2												
Chlorococcum infusionum (Schr.) Meneg.				4										
Closteriopsis longissima var. *tropica* West & West				4						10				14
Coelastrum microporum Naeg.										10				14
Crucigenia quadrata Morr.										10				14
Crucigenia tetrapedia (Kirch.) West & West										10				14
Dictyosphaerium ehrenbergianum Naeg.				4				8		10				14
Francia drocscheri (Lemm.) G.M.Sm.														14°
Kirchneriella lunaris (Kirch.) Moeb.										10				14
Lagerheimia longiseta var. *major* G.M.Sm.										10				14
Lagerheimia wratislawiensis Schr.										10				14
Micractinium pusillum Fres.					5					10				14
Oocystis borgei Snow										10				14
Oocystis elliptica W.West										10				
Oocystis gigas Arch.										10				14
Oocystis glococystiformis Borge										10				14
Oocystis lacustris Chod.										10				14

Table 1 continued.

Species	Reference												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Oocystis novae-semliae Willie										10				
Oocystis parva West & West										10				14
Oocystis pusilla Hans.										10				14
Oocystis submarina Lager.										10				14
Pediastrum boryanum (Turp.) Meneg.			3		5					10				14
Pediastrum duplex Meyen								8		10				14
Pediastrum duplex var. *brachylobum* A.Braun										10				
Pediastrum duplex var. *clathratum* (A.Braun.) Lager.				4						10				14
Pediastrum duplex var. *gracilimum* West & West										10				14
Pediastrum simplex (Meyen) Lemm.										10				
Pediastrum simplex var. *duodenarium* (Bail.) Rabh.										10				
Pediastrum tetras (Ehr.) Ralfs.										10				14
Pediastrum tetras var. *tetraodon* (Chorda) Rabh.										10				14
Pediastrum species	1													
Planktosphaeria gelatinosa G.M.Sm.					5									14
Quadrigula closteriodes (Bohlin) Printz														14°
Quadrigula lacustris (Chod.) G.M.Sm.										10				14
Scenedesmus abundans var. *brevicauda* G.M.Sm.					5					10				14
Scenedesmus acuminatus (Lager.) Chod.										10				14
Scenedesmus arcuatus var. *platydisca* G.M.Sm.					5									
Scenedesmus bijuga (Turp.) Lager														14°
Scenedesmus bijuga var. *alterans* (Rein.) Hansg.										10				14
Scenedesmus bijuga var. *flexuosus* Lemm.										10				14
Scenedesmus dimorphus (Turp.) Kuetz.				4						10				14
Scenedesmus longus var. *naegelii* (Breb.) G.M.Sm.										10				14
Scenedesmus opoliensis P.Richter										10				14
Scenedesmus perforatus Lemm.				4						10				14
Scenedesmus quadricauda (Turp.) Breb.				4						10				14
Scenedesmus quadricauda var. *longispina* (Chod.) G.M.Sm.										10				14
Scenedesmus quadricauda var. *parvus* G.M.Sm.					5									
Scenedesmus quadricauda var. *maximus* West & West													13	
Scenedesmus quadricauda var. *quadrispina* (Chodat) G.M.Sm.														14°
Scenedesmus quadricauda var. *westii* G.M.Sm.													13	
Scenedesmus species	1													
Scenedesmus species							7							
Schroederia setigera (Schr.) Lemm.								8		10				14
Schroederia species							7							
Selenastrum bibraianum Reinsch										10				14
Selenastrum gracile Reinsch				4						10				14
Selenastrum westii G.M.Sm.										10				14
Trenbaria triappendiculata Bern.								8		10				14
Order Zygnematales														
Closterium moniliferum (Bory) Ehr.														14°
Closterium venus Kuetz.					5									
Closterium species	1													
Closterium species										10				
Cosmarium margaritiferum Meneg.			3											
Cosmarium oculiferum Lagh.			3											
Cosmarium ralfsii Breb.			3											
Cosmarium tetraophthalmum (Kuetz.) Breb.			3											
Cosmarium species	1													
Desmidium species	1													
Docidium species		2												
Genicularia species		2												
Mougeotia species		2												
Mougeotia species			3											

Table 1 continued.

Species	Reference													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Spirogyra decimina (Muell.) Kuetz.			3											
Spirogyra formosa (Trans.) Czur.														14°
Spirogyra porticalis (Muell.) Cl.														14°
Spirogyra species	1													
Staurastrum natator West					5									
Staurastrum paradoxum Meyen					5					10				14
Staurastrum tetracerum Ralfs										10				14
Zygnema species	1													
CLASS CHAROPHYCEAE														
Chara species			3											
DIVISION CHRYSOPHYTA														
CLASS CHRYSOPHYCEAE														
Order Chromulinales														
Hydrurus foetidus (Vill.) Trev.				4										
Order Ochromonadales														
Dinobryon bavaricum Imhof		2												
Dinobryon divergens Imhof										10				
Dinobryon sociale var. *americanum* (Brunn.) Bach.										10				
Dinobryon sertularia Ehr.				4										
Mallomonas acaroides Perty										10				
Mallomonas caudata Iwan.										10				14
Mallomonas pseodocoronata Pres.										10				14
Mallomonas tonsurata Teil.										10				14
CLASS XANTHOPHYCEAE														
Order Mischococcales														
Characiopsis cylindrica (Lamb.) Lemm.					5									
Chlorobotrys regularis (W.West) Bohl.					5									
Ophiocytium cochleare (Eich.) A.Braun.			3											
Ophiocytium cuspidatum (Bail.) Rabh.			3											
Ophiocytium majus Naeg.			3											
Ophiocytium parculum (Perty) A.Braun.			3											
Order Tribonematales														
Tribonema bombycinum (Ag.) Derb. & Sol.			3	4						10				14
Tribonema minus Hazen			3	4										14
Tribonema utriculosum Hazen			3											
Tribonema species	1													
Order Vaucheriales														
Vaucheria borealis Hirn														14°
Vaucheria geminata (Vauch.) DeCand.			3											
Vaucheria sessilis var. *clavata* (Vauch.) DeCand.			3											
CLASS BACILLARIOPHYCEAE°°														
Achnanthes affinis Grun.											11			14
Achnanthes chilensis var. *subaequalis* Reim.													13	
Achnanthes clevei Grun.						6				10			13	14
Achnanthes clevei var. *rostrata* Hust.											11		13	14

Table 1 continued.

Species	Reference													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Achnanthes deflexa Reim.										10				14
Achnanthes exigua Grun.										10	11		13	14
Achnanthes gibberula Grun.														14*
Achnanthes hauckiana Grun.									9	10	11		13	14
Amphora species									9					
Anomoeoneis costata (Kuetz.) Hust.						6								14
Anomoeoneis serians var. *brachysira* (Breb. ex Kuetz.) Hust.														14*
Anomoeoneis sphaerophora (Ehr.) Pfitz.						6			9	10	11		13	14
Anomoeoneis sphaerophora var. *guentheri* O.Muell.						6								
Anomoeoneis vitrea (Grun.) Ross											11		13	14
Anomoeoneis species											11			
Asterionella formosa Hassall				4		6			9	10	11		13	14
Bacillaria paradoxa Gmelin										10	11			14
Bacillaria paxillifer (Muell.) Hend. (= *B. paradoxa*)													13	
Biddulphia laevis Ehr.										10	11			14
Caloneis amphisbaena (Bory) Cl.										10	11		13	14
Caloneis bacillaris var. *thermalis* (Grun.) Cl.											11			14
Caloneis bacillum (Grun.) Cl.						6				10	11		13	14
Caloneis fenzlii (Grun.) Patr.						6								
Caloneis fenzlioides Cl.-Eul.									9	10	11		13	14
Caloneis lamella Zakr.											11			
Caloneis lewisii Patr.													13	
Caloneis limosa (Kuetz.) Patr.						6							13	14
Caloneis oregonica (Ehr.) Patr.											11			14
Caloneis permagna (Bail.) Cl.													13	14
Caloneis schumanniana (Grun.) Cl.										10				
Caloneis schumanniana var. *fasciata* Hust.											11		13	14
Caloneis schumanniana var. *linearis* Hust.											11			
Caloneis silicula (Ehr.) Cl.											11		13	14
Caloneis silicula var. *limosa* (Kuetz.) VanLand.											11		13	
Caloneis ventricosa (Ehr.) Meist.						6					11			14
Caloneis ventricosa var. *subundulata* (Grun.) Patr.														14*
Caloneis ventricosa var. *truncatula* (Grun.) Meist.													13	14
Campylodiscus clypeus Ehr.											11			14
Campylodiscus hibernicus Ehr.										10				
Campylodiscus noricus var. *hibernicus* (Ehr.) Grun. (= *Campylodiscus hibernicus*)											11		13	
Chaetoceros elmorei Boyer		2												14
Cocconema (= *Cymbella*) species		2												
Cocconeis diminuta Pant.						6				10	11		13	14
Cocconeis disculus (Schum.) Cl.						6					11		13	14
Cocconeis fluviatilis Wall.						6								
Cocconeis pediculus Ehr.						6				10	11		13	14
Cocconeis placentula Ehr.						6								14
Cocconeis placentula var. *euglypta* (Ehr.) Cl.						6			9	10	11			14
Cocconeis placentula var. *lineata* (Ehr.) V.H.						6			9	10	11	12	13	14
Coscinodiscus lacustris Grun.										10				14
Coscinodiscus species									9					
Cyclotella antiqua W.Sm.										10				14
Cyclotella bodanica Eulen.										10				14
Cyclotella comta (Ehr.) Kuetz.											11			
Cyclotella kuetzingiana Thwaites						6			9	10	11			14
Cyclotella kuetzingiana var. *planctophora* Fricke											11		13	14
Cyclotella meneghiniana Kuetz.						6			9	10	11	12	13	14
Cyclotella meneghiniana var. *pumila* (Grun. ex V.H.) Hust.											11			14
Cyclotella ocellata Pant.						6				10	11		13	14

Table 1 continued.

Species	Reference													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Cyclotella stelligera (Cl.) Grun.										10				14
Cyclotella striata (Kuetz.) Grun.														14°
Cyclotella striata var. *ambigua* Grun.														14°
Cyclotella species 1											11			
Cyclotella species 2											11			
Cylindrotheca gracilis (Breb.) Grun.										10				14
Cymatopleura angulata Grev.														14°
Cymatopleura elliptica (Breb.) W.Sm.										10	11		13	14
Cymatopleura elliptica var. *constricta* Grun.						6								14
Cymatopleura solea (Breb.) W.Sm.						6				10	11		13	14
Cymatopleura solea var. *palffyi* (Pant.) Cl.-Eul.														14°
Cymatopleura solea var. *regula* (Ehr.) Grun.						6								
Cymbella affinis Kuetz.									9	10	11		13	14
Cymbella amphicephala Naeg. ex Kuetz.											11			14
Cymbella cistula (Ehr.) Kirch.						6				10	11		13	14
Cymbella cymbiformis Ag.										10	11		13	14
Cymbella ehrenbergii Kuetz.						6								
Cymbella inaequalis (Ehr.) Rabh.											11		13	14
Cymbella mexicana (Ehr.) Cl.						6				10	11		13	14
Cymbella microcephala Grun.										10				14
Cymbella minuta Hilse ex Rabh.									9					14
Cymbella minuta f. *latens* (Krasske) Reim.														14°
Cymbella minuta var. *pseudogracilis* (Choln.) Reim.											11			14
Cymbella minuta var. *silesiaca* (Bleisch ex Rabh.) Reim.										10	11		13	14
Cymbella muelleri Hust.									9	10	11	12	13	14
Cymbella muelleri f. *ventricosa* (Temp. et Perag.) Reim.											11		13	14
Cymbella prostrata (Berk.) Cl.									9	10	11			14
Cymbella prostrata var. *aeurswaldii* (Rabh.) Reim.											11		13	14
Cymbella protracta Ost.														14°
Cymbella pusilla Grun.											11			14
Cymbella sinuata Greg.										10	11			14
Cymbella subturgida Hust.						6								
Cymbella tumida (Breb. ex Kuetz.) V.H.										10	11		13	14
Cymbella tumidula Grun. ex A.Schmidt										10				14
Cymbella turgida Greg.						6								
Cymbella species		2												
Cymbella species									9					
Cymbella species 1										10				
Cymbella species 2										10				
Denticula elegans Kuetz.										10	11		13	14
Denticula elegans var. *kittoniana* (Grun.) DeT.											11			
Denticula elegans f. *valida* Pedic.										10				14
Denticula subtilis Grun.														14°
Denticula tenuis Kuetz.														14°
Denticula tenuis var. *crassula* (Naeg.) West & West											11			14
Diatoma anceps (Ehr.) Kirchn.						6								14
Diatoma hiemale (Roth) Hieb.											11			14
Diatoma hiemale var. *mesodon* (Ehr.) Grun.											11			14
Diatoma tenue Ag.										10	11		13	14
Diatoma tenue var. *elongatum* Lyngb.									9	10	11	12		14
Diatoma vulgare Bory										10	11		13	14
Diatoma vulgare var. *breve* Grun.											11			14
Diatoma vulgare var. *grande* (W.Sm.) Grun.										10				
Diatoma species	1	2												
Diatomella balfouriana Grev.											11			14
Diploneis elliptica (Kuetz.) Cl.											11		13	14
Diploneis marginestriata Hust.											11		13	14
Diploneis oblongella (Naeg. ex Kuetz.) Ross									9	10	11		13	14
Diploneis oculata (Breb.) Cl.													13	

Table 1 continued.

Species	Reference													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Diploneis pseudovalis Hust.						6				10	11		13	14
Diploneis puella (Schum.) Cl.													13	14
Diploneis smithii (Breb. ex W.Sm.) Cl.						6								
Diploneis smithii var. *dilatata* (M.Perag.) Boyer										10	11		13	14
Diploneis smithii var. *pumila* (Grun.) Hust.										10				
Diploneis species 1											11			
Diploneis species 2											11			
Diploneis species													13	
Encyonema (= *Cymbella*) species	1													
Entomoneis alata (Ehr.) Ehr.										10				14
Entomoneis paludosa (W.Sm.) Reim.						6					11		13	14
Epithemia adnata (Kuetz.) Breb.						6			9	10				
Epithemia adnata var. *minor* (Perag. et Herib.) Patr.											11		13	14
Epithemia adnata var. *porcellus* (Kuetz.) Patr.									9		11			
Epithemia adnata var. *proboscidea* (Kuetz.) Patr.									9		11			
Epithemia argus (Ehr.) Kuetz.						6					11		13	14
Epithemia argus var. *alpestris* Grun.											11			
Epithemia argus var. *longicornus* (Ehr.) Grun.													13	
Epithemia argus var. *protracta* A.Mayer											11		13	14
Epithemia hyndmanii W.Sm.											11			14
Epithemia intermedia Fricke						6					11		13	14
Epithemia ocellata (Ehr.) Kuetz.													13	14
Epithemia sorex Kuetz.						6				10	11			14
Epithemia turgida (Ehr.) Kuetz.						6				10	11		13	14
Epithemia turgida var. *granulata* (Ehr.) Brun.						6				10	11			14
Epithemia turgida var. *westermannii* (Ehr.) Grun.														14*
Epithemia zebra (Ehr.) Kuetz.						6								
Epithemia zebra var. *saxonica* (Kuetz.) Grun.						6								
Epithemia species	1													
Eunotia arcus var. *bidens* Grun.										10	11			14
Eunotia curvata (Kuetz.) Lagerst.											11			14
Eunotia diodon Ehr.						6								
Eunotia incisa W.Sm. ex Greg.											11			14
Eunotia pectinalis (O.F.Muell.) Rabh.											11		13	14
Eunotia pectinalis var. *minor* (Kuetz.) Rabh.											11			14
Eunotia tenella (Grun.) Cl.														14*
Eunotia species		2												
Fragilaria bicapitata A.Mayer						6								
Fragilaria brevistriata Grun.						6			9	10	11			14
Fragilaria brevistriata var. *capitata* Herib.						6				10				14
Fragilaria brevistriata var. *inflata* (Pant.) Hust.						6			9	10	11	12	13	14
Fragilaria capucina var. *mesolepta* Rabh.						6					11			14
Fragilaria construens (Ehr.) Grun.						6			9	10	11	12	13	14
Fragilaria construens var. *binodis* (Ehr.) Grun.						6			9	10	11		13	14
Fragilaria construens var. *pumila* Grun.						6				10	11		13	14
Fragilaria construens var. *venter* (Ehr.) Grun.						6			9	10	11	12	13	14
Fragilaria crotonensis Kitton									9	10			13	14
Fragilaria lapponica Grun.						6			9		11		13	14
Fragilaria leptostauron (Ehr.) Hust.						6				10	11		13	14
Fragilaria leptostauron var. *dubia* (Grun.) Hust.						6					11		13	14
Fragilaria pinnata Ehr.						6			9		11	13		14
Fragilaria pinnata var. *intercedens* (Grun.) Hust.											11			14
Fragilaria pinnata var. *lancettula* (Schum.) Hust.						6			9					14
Fragilaria similis Krasske									9		11		13	14
Fragilaria vaucheriae (Kuetz.) Peters.						6			9	10	11	12	13	14
Fragilaria vaucheriae var. *capitellata* (Grun.) Patr.														14*
Fragilaria virescens Ralfs						6			9		11		13	14
Frustulia rhomboides (Ehr.) DeT.						6								14

Table 1 continued.

Species	Reference													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Frustulia vulgaris (Thwaites) DeT.											11			14
Gomphoneis herculeana (Ehr.) Cl.						6								
Gomphonema acuminatum Ehr.											11			14
Gomphonema affine Kuetz.									9					14
Gomphonema affine var. *insigne* (Greg.) Andrews											11			
Gomphonema angustatum (Kuetz.) Rabh.						6				10	11		13	14
Gomphonema angustatum var. *intermedia* Grun.														14°
Gomphonema clevei Fricke										10	11			14
Gomphonema dichotomum Kuetz.											11		13	14
Gomphonema gracile Ehr. em. V.H.						6			9		11			14
Gomphonema intricatum Kuetz.						6			9	10	11		13	14
Gomphonema intricatum var. *vibrio* (Ehr.) Cl.														14°
Gomphonema lanceolatum Ag.														14°
Gomphonema olivaceum (Lyngb.) Kuetz.						6			9	10	11		13	14
Gomphonema olivaceum var. *calcarea* (Cl.) Cl.											11		13	14
Gomphonema parvulum Kuetz.									9	10	11		13	14
Gomphonema septum Mogh.														14°
Gomphonema sphaerophorum Ehr.										10				
Gomphonema subclavatum (Grun.) Grun.											11			14
Gomphonema subclavatum var. *commutatum* (Grun.) A.Mayer									9		11			14
Gomphonema subclavatum var. *mexicanum* (Grun.) Patr.											11			14
Gomphonema tenellum Kuetz.									9					14
Gomphonema truncatum Ehr.										10				14
Gomphonema truncatum var. *capitatum* (Ehr.) Patr.											11		13	
Gomphonema truncatum var. *turgidum* (Ehr.) Patr.											11			
Gomphonema ventricosum Greg.						6			9	10	11		13	14
Gomphonema species	1													
Gomphonema species									9					
Gyrosigma acuminatum (Kuetz.) Rabh.						6				10	11	12	13	14
Gyrosigma attenuatum (Kuetz.) Rabh.						6								
Gyrosigma nacrum (W.Sm.) Griff. & Henfr.						6					11			14
Gyrosigma spencerii (Quek.) Griff. & Henfr.											11		13	14
Gyrosigma spencerii var. *curvula* (Grun.) Reim.						6								
Gyrosigma strigilis (W.Sm.) Cl.											11		13	14
Hannaea arcus (Ehr.) Patr.						6				10				14
Hantzschia amphioxys (Ehr.) Grun.										10	11		13	14
Hantzschia amphioxys f. *capitata* O.Muell.										10				14
Hantzschia virgata (Roper) Grun.											11			14
Mastogloia elliptica var. *danseii* (Thwaites) Cl.						6				10	11		13	14
Mastogloia pumila (Grun.) Cl.														14°
Mastogloia smithii Thwaites ex W.Sm.						6							13	14
Mastogloia smithii var. *lacustris* Grun.						6					11		13	14
Melosira distans (Ehr.) Kuetz.											11			14
Melosira granulata (Ehr.) Ralfs						6		8	9	10	11	12	13	14
Melosira granulata var. *angustissima* O.Muell.						6			9	10	11	12	13	14
Melosira islandica O.Muell.											11		13	
Melosira italica (Ehr.) Kuetz.									9	10	11	12	13	14
Melosira roseana Rabh.											11			14
Melosira varians Ag.										10	11		13	14
Melosira species							7							
Meridion circulare (Grev.) Ag.						6								14
Meridion circulare var. *constrictum* (Ralfs) V.H.											11			
Meridion species	1													
Navicula abiskoensis Hust.											11		13	14
Navicula accepta Hust.											11			
Navicula accomoda Hust.													13	14

Table 1 continued.

Species	Reference													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Navicula amphibola Cl.										10	11			14
Navicula anglica Ralfs											11		13	14
Navicula angusta Grun.											11			
Navicula arenaria Donk.									9					14
Navicula arvensis Hust.									9	10			13	14
Navicula atomus (Kuetz.) Grun.											11			14
Navicula auriculata Hust.														14°
Navicula aurora Sov.						6			9	10	11			14
Navicula bacillum Ehr.						6					11		13	
Navicula bicephala Hust.						6								
Navicula capitata Ehr.						6				10	11			14
Navicula capitata var. *hungarica* (Grun.) Ross						6			9	10	11	12	13	14
Navicula capitata var. *luneburgensis* (Grun.) Patr.											11		13	14
Navicula cincta (Ehr.) Ralfs									9		11		13	14
Navicula circumtexta Meist. ex Hust.									9	10	11		13	14
Navicula clementis Grun.											11			14
Navicula cruciculа (W.Sm.) Donk.										10				
Navicula cryptocephala Kuetz.						6			9	10	11		13	14
Navicula cryptocephala var. *veneta* (Kuetz.) Rabh.									9	10	11	12	13	14
Navicula cuspidata (Kuetz.) Kuetz.										10	11	12	13	14
Navicula cuspidata var. *heribaudi* Perag.											11		13	14
Navicula cuspidata var. *major* Meist.											11		13	14
Navicula difficillimoides Hust.						6					11			14
Navicula didcis Patr.														14°
Navicula elginensis (Greg.) Ralfs														14°
Navicula elginensis var. *rostrata* (A.Mayer) Patr.														14°
Navicula exigua Greg. ex Grun.									9	10			13	14
Navicula exigua var. *capitata* Patr.										10				14
Navicula festiva Krasske													13	
Navicula gastrum (Ehr.) Kuetz.													13	14
Navicula gottlandica Grun.													13	
Navicula graciloides A.Mayer									9	10	11		13	14
Navicula gregaria Donk.						6					11			14
Navicula grimmei Krasske														14°
Navicula halophila (Grun.) Cl.											11		13	14
Navicula halophila f. *tenuirostris* Hust.														14°
Navicula heufleri Grun.													13	14
Navicula heufleri var. *leptocephala* (Breb. ex Grun.) Perag.									9				13	14
Navicula inflexa (Greg.) Ralfs.													13	
Navicula insociabilis var. *dissipatoides* Hust.											11			
Navicula integra (W.Sm.) Ralfs						6								
Navicula lacustris						6								
Navicula laevissima Kuetz.														14°
Navicula lanceolata (Ag.) Kuetz.						6			9	10	11		13	14
Navicula lapidosa Krasske						6								
Navicula menisculus var. *upsaliensis* (Grun.) Grun.										10	11		13	14
Navicula minima Grun.						6			9	10	11		13	
Navicula minuscula Grun.										10	11			14
Navicula molestiformis Hust.											11			
Navicula muralis Grun.						6								
Navicula mutica Kuetz.						6					11		13	14
Navicula mutica var. *cohnii* (Hilse) Grun.											11		13	14
Navicula mutica var. *nivalis* (Ehr.) Hust. (= *Navicula nivalis*)													13	14

Table 1 continued.

Species	Reference													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Navicula mutica var. *undulata* (Hilse) Grun.						6								14
Navicula nivalis Ehr.											11			14
Navicula oblonga (Kuetz.) Kuetz.						6			9	10	11		13	14
Navicula odiosa Wall.											11			14
Navicula omissa Hust.											11			
Navicula pelliculosa (Breb. ex Kuetz.) Hilse										10	11		13	14
Navicula peregrina (Ehr.) Kuetz.									9	10	11		13	14
Navicula placentula (Ehr.) Kuetz.						6					11		13	14
Navicula placentula f. rostrata A.Mayer														14°
Navicula protracta Grun.											11		13	14
Navicula protracta f. *subcapitata* (Wisl. et Por.) Hust.											11			
Navicula pseudotuscula Hust.											11			
Navicula pupula Kuetz.						6				10	11		13	14
Navicula pupula var. *capitata* (Skv.) Meyer														14°
Navicula pupula var. *elliptica* Hust.														14°
Navicula pupula var. *mutata* (Krasske) Hust.											11			14
Navicula pupula var. *rectangularis* (Greg.) Grun.						6				10	11		13	14
Navicula pygmaea Kuetz.						6				10	11			14
Navicula radiosa Kuetz.						6				10	11		13	14
Navicula radiosa var. *parva* Wall.													13	
Navicula radiosa var. *tenella* (Breb. ex Kuetz.) Grun.									9		11		13	14
Navicula reinhardtii (Grun.) Grun.						6					11		13	14
Navicula reinhardtii var. *elliptica* Herib.										10	11		13	14
Navicula rhyncocephala Kuetz.									9	10	11		13	14
Navicula rhyncocephala var. *amphiceros* (Kuetz.) Grun.											11	12	13	14
Navicula rhyncocephala var. *germainii* (Wall.) Patr.														14°
Navicula salinarum Grun.									9	10			13	14
Navicula salinarum var. *intermedia* (Grun.) Cl.									9	10	11			14
Navicula schroeteri var. *escambia* Patr.									9		11			14
Navicula scutelloides W.Sm. ex Greg.						6				10	11		13	14
Navicula secreta var. *apiculata* Patr.										10	11		13	14
Navicula secura Patr.											11		13	14
Navicula seminulum Grun.														14°
Navicula seminuloides Hust.											11	12		
Navicula septata Hust.						6								
Navicula strenzkei Hust.											11			
Navicula subbacillum Hust.														14°
Navicula subhamulata Grun.						6					11		13	14
Navicula symmetrica Patr.											11			14
Navicula tenelloides Hust.									9	10	11		13	14
Navicula tenera Hust.														14°
Navicula tripunctata (O.F.Muell.) Bory									9	10	11		13	14
Navicula tripunctata var. *schizonemoides* (V.H.) Patr.									9		11		13	14
Navicula tuscula Ehr.										10	11		13	
Navicula viridula (Kuetz.) Kuetz. em V.H.										10			13	14
Navicula viridula var. *avenacea* (Breb. ex Grun.) V.H.											11			14
Navicula viridula var. *rostellata* (Kuetz.) Cl.											11			14
Navicula wardii Patr.													13	
Navicula wittrockii (Lagerst.) Temp. et Perag.											11			
Navicula species	1	2												
Navicula species									9					
Navicula species											11			
Navicula species										10				
Neidium affine (Ehr.) Pfitz.						6					11			

Table 1 continued.

Species	Reference													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Neidium affine var. *amphirhynchus* (Ehr.) Cl.											11			
Neidium bisulcatum var. *baicalense* (Skv. & Meyer) Reim.														14°
Neidium dubium (Ehr.) Cl.											11		13	
Neidium iridis (Ehr.) Cl.						6				10	11	12	13	14
Nitzschia acicularis W.Sm.						6			9	10			13	14
Nitzschia acicularoides Hust.											11			
Nitzschia acuta Hantz.						6								14
Nitzschia amphibia Grun.									9	10	11		13	14
Nitzschia angustata (W.Sm.) Grun.						6					11		13	14
Nitzschia angustata var. *acuta* Grun.											11		13	
Nitzschia apiculata (Greg.) Grun.						6			9		11	12		14
Nitzschia capitellata Hust.														14°
Nitzschia clausii Hantz.						6								
Nitzschia communis Rabh.										10				14
Nitzschia denticula Grun.											11			14
Nitzschia dissipata (Kuetz.) Grun.						6			9	10	11	12		14
Nitzschia dubia W.Sm.											11			
Nitzschia epithemioides Grun.														14°
Nitzschia filiformis (W.Sm.) Hust.						6			9	10	11			14
Nitzschia fonticola Grun.										10				14
Nitzschia frustulum (Kuetz.) Grun.						6			9	10	11		13	14
Nitzschia gracilis Hantz.						6			9		11		13	14
Nitzschia granulata Grun.											11		13	14
Nitzschia hantzschiana Rabh.						6			9	10	11		13	14
Nitzschia holsatica Hust.									9					
Nitzschia hungarica Grun.						6				10	11	12	13	14
Nitzschia inconspicua Grun.									9		11		13	14
Nitzschia intermedia Hantz. ex Cl. & Grun.											11		13	14
Nitzschia lacunarum Hust.						6								
Nitzschia linearis (Ag.) W.Sm.						6			9	10	11		13	14
Nitzschia longissima var. *closterium* (W.Sm.) V.H.									9	10	11			14
Nitzschia microcephala Grun.														14°
Nitzschia minuta Bleisch											11			
Nitzschia obtusa W.Sm.						6								14
Nitzschia ovalis Arnott									9	10	11			14
Nitzschia palea (Kuetz.) W.Sm.						6			9	10	11	12	13	14
Nitzschia paleacea Grun.									9	10	11			14
Nitzschia perminuta Grun.										10				
Nitzschia punctata (W.Sm.) Grun.						6			9	10	11		13	14
Nitzschia pusilla (Kuetz.) Grun. em. Lange-Bert.														14°
Nitzschia recta Hantz.											11			
Nitzschia romana Grun.						6					11		13	14
Nitzschia sigma (Kuetz.) W.Sm.											11		13	14
Nitzschia sigmoidea (Ehr.) W.Sm.									9	10	11		13	14
Nitzschia spectabilis (Ehr.) Ralfs											11			14
Nitzschia stagnorum Rabh.									9		11			14
Nitzschia subacicularis Hust.														14°
Nitzschia subtilis (Kuetz.) Grun.											11		13	14
Nitzschia thermalis Kuetz.											11			14
Nitzschia thermalis var. *minor* Hilse						6								
Nitzschia tryblionella Hantz.										10	11		13	14
Nitzschia tryblionella var. *debilis* (Arnott) A.Mayer						6				10	11		13	14
Nitzschia tryblionella var. *genuina* Grun. (= *Nitzschia tryblionella* var. *tryblionella*)										10				
Nitzschia tryblionella var. *levidensis* (W.Sm.) Grun.										10	11		13	14
Nitzschia tryblionella var. *victoriae* Grun.						6				10	11		13	14
Nitzschia valdestriata Aleem et Hust.														14°

Table 1 continued.

Species	Reference													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Nitzschia species 1									9					
Nitzschia species 2									9					
Nitzschia species 1											11			
Nitzschia species 2											11			
Nitzschia species 3											11			
Opephora martyi Herib.									9	10	11		13	14
Pinnularia abaujensis var. *linearis* (Hust.) Patr.														14°
Pinnularia abaujensis var. *subundulata* (A.Mayer ex Hust.) Patr.											11			
Pinnularia acrosphaeria W.Sm.														14°
Pinnularia appendiculata (Ag.) Cl.											11			14
Pinnularia biceps Greg.											11			
Pinnularia borealis Ehr.						6					11		13	14
Pinnularia borealis var. *rectangularis* Carlson										10				
Pinnularia brebissonii (Kuetz.) Rabh.										10	11			14
Pinnularia burkii Patr.													13	
Pinnularia maior (Kuetz.) Rabh.											11		13	14
Pinnularia microstauron (Ehr.) Cl.						6				10	11		13	14
Pinnularia molaris (Grun.) Cl.						6								
Pinnularia nobilis (hr.) Ehr.														14°
Pinnularia obscura Krasske													13	14
Pinnularia ruttneri Hust.											11			
Pinnularia viridis (Nitz.) Ehr.						6				10	11		13	14
Pinnularia viridis var. *minor* Cl.											11		13	14
Plagiotropis arizonica Czar. & Blinn.											11			14
Plagiotropis vitrea (W.Sm.) Grun.										10				14
Plagiotropis vitrea var. *scaligera* (Grun. ex Cl. & Grun.) Perag.														14°
Pleurosigma australe Grun.										10				14
Pleurosigma delicatulum W.Sm.						6				10	11	12	13	14
Rhizosolenia minima Levan.														14°
Rhoicosphenia curvata (Kuetz.) Grun. ex Rabh.				4		6			9	10	11		13	14
Rhopalodia gibba (Ehr.) O.Muell.						6			9	10	11		13	14
Rhopalodia gibba var. *ventricosa* (Kuetz.) H. et M.Perag.										10	11		13	14
Rhopalodia gibberula (Ehr.) Muell.														14°
Rhopalodia gibberula var. *protracta* Grun.										10				14
Rhopalodia gibberula var. *vanheurckii* O.Muell.									9		11		13	14
Rhopalodia musculus (Kuetz.) O.Muell.										10	11		13	14
Scoliopleura peisonis Grun.						6				10	11	12	13	14
Stauroneis anceps Ehr.														14°
Stauroneis anceps var. *siberica* Grun. ex Cl.						6								
Stauroneis kriegeri Patr.														14°
Stauroneis muriella f. linearis Lund						6								
Stauroneis phoenicenteron (Nitz.) Ehr.						6				10	11		13	14
Stauroneis phoenicenteron var. *brunii* (M.Perag & Herib.) Voigt						6								
Stauroneis phoenicenteron f. *gracilis* (Ehr.) Hust.						6								
Stauroneis smithii Grun.											11			14
Stauroneis wislouchii Poretz. & Anis.											11			
Stauroneis species													13	
Stephanodiscus astraea (Ehr.) Grun.						6			9	10				14
Stephanodiscus astraea var. *minutula* (Kuetz.) Grun.									9	10		12		14
Stephanodiscus carconensis var. *pusilla* Grun.											11			
Stephanodiscus dubius (Fricke) Hust.											11	12	13	
Stephanodiscus hantzschii Grun.											11	12		
Stephanodiscus invisitatus Hohn & Heller.											11	12	13	14
Stephanodiscus minutus Cl. & Moell.											11	12		

Table 1 continued.

Species	Reference													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Stephanodiscus niagarae Ehr.				4		6			9	10	11		13	14
Stephanodiscus subtilis V.Goor											11	12	13	
Stephanodiscus species												12		
Stephanodiscus species 1													13	
Stephanodiscus species 2													13	
Surirella angusta Kuetz.						6			9	10	11		13	14
Surirella biseriata Breb.											11		13	14
Surirella linearis W.Sm.						6					11		13	14
Surirella linearis var. *constricta* Grun.						6								
Surirella ovalis Breb.										10	11	12	13	14
Surirella ovalis var. *brightwellii* (W.Sm.) Cl.-Eul.									9	10	11		13	
Surirella ovata Kuetz.									9	10	11	12	13	14
Surirella ovata var. *pinnata* W.Sm.						6								14
Surirella patella Ehr.											11			14
Surirella pseudovalis Hust.											11			
Surirella robusta Ehr.											11			14
Surirella robusta var. *splendida* (Ehr.) V.H.											11		13	
Surirella spiralis Kuetz.						6					11			
Surirella striatula Turp.										10	11		13	14
Surirella species		2												
Synedra acus Kuetz.						6			9		11		13	14
Synedra amphicephala var. *austriaca* (Grun.) Hust.													13	
Synedra capitata Ehr.						6				10	11		13	14
Synedra cyclopum Bruts.														14*
Synedra delicatissima var. *angustissima* Grun.									9	10	11	12	13	14
Synedra famelica Kuetz.														14*
Synedra fasiculata (Ag.) Kuetz.														14*
Synedra fasiculata var. *truncata* (Grev.) Patr.									9	10	11			14
Synedra filiformis var. *exilis* Cl.-Eul.						6								
Synedra mazamensis Sov.									9	10	11			14
Synedra minuscula Grun.											11			14
Synedra parasitica (W.Sm.) Hust.													13	
Synedra parasitica var. *subconstricta* (Grun.) Hust.														14*
Synedra pulchella Kuetz.														14*
Synedra radians Kuetz.														14*
Synedra rumpens Kuetz.														14*
Synedra rumpens var. *familiaris* (Kuetz.) Grun.						6				10				14
Synedra rumpens var. *fragilarioides* Grun.										10	11			14
Synedra rumpens var. *meneghiniana* Grun.											11		13	
Synedra rumpens var. *scotica* Grun.										10	11			14
Synedra socia Wall.									9					14
Synedra tenera W.Sm.										10	11			14
Synedra ulna (Nitz.) Ehr.						6			9	10	11	12	13	14
Synedra ulna var. *contracta* Oestr.									9	10	11			14
Synedra ulna var. *danica* (Kuetz.) Grun.														14*
Synedra ulna var. *longissima* (W.Sm.) Brun.						6								
Synedra ulna var. *oxyrhynchus* (Kuetz.) V.H.														14*
Synedra ulna var. *oxyrhynchus* f. *mediocontracta* (Forti) Hust.													13	
Synedra ulna var. *spathulifera* (Grun.) V.H.						6								
Synedra ulna var. *subaequalis* (Grun.) V.H.											11			
Synedra species	1	2												
Tabellaria flocculosa (Roth) Kuetz.					4									
Tabellaria species			2											
Tetracyclus lacustris Ralfs							6							
Thalassiosira fluviatilis Hust.											11			14
Thalassiosira species										10				
Thalassiosira species											11			
Thalassiosira species													12	

Table 1 continued.

Species	Reference													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
DIVISION EUGLENOPHYTA														
CLASS EUGLENOPHYCEAE														
Order Euglenales														
Euglena ehrenbergii Klebs										10				14
Euglena gracilis Klebs										10				14
Euglena oxyuris Schmar.										10				14
Euglena proxima Dang.										10				14
Euglena tripteris (Duj.) Klebs														14*
Euglena viridis Ehr.														14*
Euglena species							7							
Lepocinclis salina Fritsch										10				14
Phacus chloroplastes Pres.										10				14
Phacus spiralis All. et Jahn														14*
Phacus tortus (Lemm.) Skv.										10				
Strombomonas fluviatilis (Lemm.) Defl.										10				14
Trachelomonas crebea (Kill.) Defl.										10				14
DIVISION PYRRHOPHYTA														
CLASS DINOPHYCEAE														
Order Peridiniales														
Ceratium hirundinella (Muell.) Dujard.		2		4				8		10				14
Order Glenodiniales														
Glenodinium dinobryonis (Wol.) Lind.										10				14
Glenodinium penardiforme (Lind.) Schill.										10				14
Glenodinium species							7							
CRYPTOPHYTA														
CLASS CRYPTOPHYCEAE														
Order Cryptomonadales														
Chroomonas species							7							
Cryptomonas species							7							

Column numbers refer to the following papers:

1. Tanner (1930)
2. Tanner (1931)
3. Snow (1932)
4. Harding (1970)
5. Harding (1971)
6. Bolland (1974)
7. EPA (1977)
8. Whiting (1978)
9. Grimes et al. (1980)
10. Rushforth et al. (1981)
11. Grimes and Rushforth (1982)
12. Grimes and Rushforth (1983)
13. Javakul and Rushforth (1983)
14. Present report

*Algal species previously unreported from Utah Lake.
**Diatoms are listed in alphabetical order.

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